APPENDIX A

LANDFILL GAS CONTROL PROTOCOL

A. INTRODUCTION

This Landfill Gas ("LFG") Control Protocol ("Protocol") is attached as Appendix A to and incorporated by reference into the Preliminary Injunction entered on October 20, 2006 in *Commonwealth of Massachusetts v. New Ventures Associates, LLC*, Suffolk Superior Court, Civil Action No. 06-0790 C ("Preliminary Injunction"). This Protocol**:**

- Specifies the operating requirements necessary to achieve the objectives of the Landfill Gas Collection and Treatment System (LFG System) for both the temporary and permanent LFG System.
- Specifies the performance standards for the H2S pre-treatment system.
- Specifies the LFG System monitoring requirements.
- Specifies the LFG extraction well tuning requirements.
- Specifies the record keeping and reporting requirements.
- Specifies the off-site ambient air monitoring requirements.

B. GENERAL PERFORMANCE STANDARDS

New Ventures LLC shall extract Landfill Gas at a rate sufficient to ensure the optimum operation of the LFG System including the pretreatment and flare systems while collectively ensuring:

- Compliance with G.L. c. 111 §150A and 310 CMR 19.000 *et seq*. and G.L. c. 111. §§ 142 A-M and 310 CMR 7.00 *et seq.*;
- LFG is extracted at a rate that shall not cause or promote subsurface landfill combustion;
- LFG is extracted of a sufficient quality to enable its combustion via a properly sized, properly located and properly designed enclosed flare; and
- LFG is extracted at a sufficient rate to control migration of combustible components of the LFG to off-site and on-site structures, underground utilities, and confined spaces.

In order to monitor compliance with these performance standards New Ventures shall implement the actions described herein. Brief spikes in LFG emissions that create or result in Department verified nuisance odors will not be cause or provide a basis for ceasing acceptance and placement of C & D Fines and Materials pursuant to the requirements of paragraph 9 of the Preliminary Injunction so long as violations caused by short term emissions are promptly corrected and New Ventures returns to compliance with the air quality and nuisance requirements of 310 CMR 19.000 *et seq*. and 310 CMR 7.00 *et seq*. within 72 hours of written notice of any violation by the Department. Nor will brief spikes in LFG emissions that create or result in Department verified nuisance odors affect the demonstrated effectiveness of the enclosed flare or temporary or permanent pretreatment systems required by this Appendix and by paragraphs 1(d) and 1(h) or the Preliminary Injunction so long as New Ventures returns to full compliance with the air quality and nuisance requirements of 310 CMR 19.000 *et seq*. and 310 CMR 7.00 *et seq*. as stated above.

C. PROGRAM COORDINATION

1. Engineer Oversight

The direct oversight of a properly qualified professional experienced in air pollution control technology design and operation and landfill operation and closure is required in order to achieve the objectives described above. Therefore, New Ventures shall contract with a qualified independent Massachusetts Registered Professional Engineer (the Engineer) to coordinate, oversee, and monitor the operation and effectiveness of the LFG control measures including the LFG System and the other measures required for controlling the ambient emissions from the landfill.

2. Weekly Inspections

The Engineer shall conduct an inspection of the landfill once a week including an inspection of the landfill gas system in accordance with Section F below with the individual responsible for conducting the daily inspection(s). This shall include observing the collection of 1 of the daily sets of H2S samples required from the landfill gas pre-treatment system. In addition, the Engineer shall inspect the landfill surface and cover, the leachate collection system, and the storm water system including the perimeter hay bales and silt fencing. The Engineer shall also review the Collection System Monitoring Forms and logbook entries since the Engineer's last weekly inspection for completeness and accuracy and shall confirm that all the required instrumentation described in Section F below is properly maintained and in working order in accordance with the manufacturer's recommendations.

3. Weekly Status Report

The Engineer shall be responsible for all aspects of the program, including filing weekly status reports with the MassDEP on the status and effectiveness of the measures being implemented at the landfill by New Ventures to control the releases of leachate and landfill gas from the site and emissions from the LFG System. The Weekly Status Report shall summarize the results of the Engineer's weekly inspection and the Engineer's recommendations for maintenance and operation of the landfill gas system, the landfill cap and cover, leachate control system, and the storm water system. The Weekly Status Report shall also include the Engineer's evaluation of the ongoing inspection and monitoring of the landfill by New Ventures and a certification that hard copies of the records required by Sections F through I below are being maintained by New Ventures at the Landfill. The Engineer shall provide the Weekly Status Report to MassDEP electronically either by email or FAX within two (2) working days of conducting the inspection.

D. LFG 24/7 PRE-TREATMENT SYSTEM PERFORMANCE CRITERIA:

1. The LFG Pre-Treatment System shall meet the following performance criteria:
    a. Operate 24 hours a day/7 days a week (24/7).
    b. Consist of at least a 2 vessel parallel system with a third polishing vessel.
    c. Minimum removal efficiency of 95% for H2S.
    d. Maximum outlet concentration of 1.01 lbs/hr H2S from the pre-treatment system into the landfill gas flare.
    e. For a regenerative system, such as Sulfa-Bind, the regeneration time for each vessel must be less than the break through time of the other vessel.

2. The pre-treatment system shall be considered to be in compliance with the performance criteria of D.1.c. and D.1.d. above provided that the H2S concentration of the landfill gas into the flare does not exceed the minimum 95% reduction of H2S or the 1.01 lbs/hr H2S criteria for any two hours during a twenty-four hour period. In determining compliance with these requirements, any single sample shall be considered to represent 1 hour, unless a minimum of 4 samples are collected over an hourly period and averaged on a time weighted-basis.

E. PRE-TREATMENT SYSTEM INITIAL STARTUP – DEMONSTRATION SYSTEM OPERATION:

Upon installation and start-up of the 24/7 pre-treatment system New Ventures shall, every four hours during the initial forty-eight (48) hours of operation of the pre-treatment system, sample the inlet into the pre-treatment system and the outlet of each active vessel of the pre-treatment system for H_2S and measure the flow rate into the flare. When the last four hour sampling event is performed at the end of the start-up period (that is, the sample collected at the 48th hour of operation) New Ventures shall also collect from the inlet and the outlet of the pretreatment system samples of landfill gas for laboratory analysis of sulfide compounds (sulfides, mercaptans, and thiols) using EPA Method 15 using GC/FPD or equivalent. If the readings meet the LFG Pre-Treatment System Performance Criteria for the 48-hour period then the pre-treatment system will be considered to be operational. Thereafter New Ventures shall comply with the LFG System Monitoring requirements of Section F LFG System Monitoring below.

F. LFG SYSTEM MONITORING

1. Instrumentation

Parameters monitored under this protocol shall be measured with the following instruments, or equivalent:

a. **Landfill Gas Analyzer** –Landtec GEM-2000 Infrared Landfill Gas Analyzer or equivalent. The GEM-2000 shall be used to measure methane, carbon dioxide, oxygen and hydrogen sulfide. The meter shall be calibrated and operated according to the manufacturer's recommendations.
b. **Hydrogen Sulfide and Carbon Monoxide Indicator Tubes** - Indicator tubes shall be used to measure hydrogen sulfide (H_2S) and carbon monoxide (CO) concentrations. Drager Tubes shall be used to measure H2S in the range from the upper detection limit of the GEM-2000 to 40,000 parts per million by volume (ppmv). An Arizona Instrument Model 631-X Jerome Meter or equivalent shall be used to measure H_2S at concentrations less than 50 ppmv. The Jerome Meter shall be calibrated and operated in accordance with the manufacturer's instruction.
c. **Pressure** –Landtec GEM-2000 Infrared Landfill Gas Analyzer, Dwyer analog Magnehelic gauge, Dwyer Series 475 Mark II electronic manometer, or an equivalent instrument. The meter used shall be calibrated and operated according to the manufacturer's recommendations.
d. **Temperature** – Landtec GEM-2000 temperature probe, Omega HH-21 digital thermometer, or an equivalent instrument. The meter used shall be calibrated and operated according to the manufacturer's recommendations.
e. **Landfill Gas Flow Measurement** – The installation of a Flow Meter on the enclosed flare to measure the flow of landfill gas into the pretreatment system and the enclosed flare**.** Pending installation of the Flow Meter New Ventures shall once a day measure the

landfill gas flow rate into the pretreatment system and the existing flare using a Pitot Tube.

f. **Meteorological Data** –New Ventures shall maintain and operate the meteorological station at the Landfill and collect the following data continuously wind speed and direction, barometric pressure and temperature.

2. Monitoring and Record Keeping

New Ventures shall monitor the LFG System in accordance with the procedures described herein. The Engineer or his/her direct employee shall review the inspection reports during their weekly inspection and provide MassDEP and New Ventures with recommended actions to maintain the LFG System and meet the performance standards in the weekly status report. An individual certified by the Engineer as qualified in the monitoring and operation of the landfill gas system shall conduct the required inspection and sampling of the landfill gas system a minimum of once a day,

a. Inspect the condition of all above ground piping, including header lines, laterals, wellheads, and flexible connections. Any needed repairs, such as those made to loose fittings, cracked, worn, or damaged piping, etc. shall be noted and recorded in the inspection log.
b. Inspect the condition of the wellhead or valve components, including monitoring ports, valves, and dust caps. Any needed repairs shall be noted and recorded in the inspection log.
c. Repair, if possible, wellhead or valve components that are needed to collect monitoring information. These repairs could include such items as replacement of monitoring ports. All repairs made shall be noted and recorded in the inspection log.
d. Inspect the condition of the area surrounding the wellhead or valve. Note the occurrence of any settlement, ponding of water, cracking or erosion of the surface cover, or distressed or dying vegetation.
e. Collect and record the following information from each extraction well and main header valve:
    i. Gas quality, including methane, carbon dioxide, oxygen, and H_2S.
    ii. System pressure (inches of water column).
    iii. Wellhead static pressure (inches of water column).
    iv. Gas flow rate (scfm), as appropriate.
    v. Gas temperature.
    vi. Carbon monoxide concentration, if the temperature exceeds 130 ^{o}F.
    vii. Valve adjustment, if any.
    viii. Check if valve is closed fully.
f. Measure, the flow rate into flare and the H_2S concentration of the landfill gas at the inlet and outlet of the pre-treatment system a minimum of once every 4 hours each day. If a regenerative system is being used New Ventures shall in addition measure the H_2S concentration of landfill gas at the inlet and outlet of each pre-treatment vessel when it is started after regeneration or after replacement of spent media with new media and just prior to the shut down of the pretreatment vessel for regeneration or replacement of the media. One (1) sample of landfill gas per month from the inlet of the landfill gas flare for laboratory analysis of sulfide compounds (sulfides, mercaptans, and thiols) using EPA Method 15 using GC/FPD or equivalent and for VOCs using EPA Method TO-15 or equivalent shall also be required. For testing purposes, the inlet and outlet sampling ports shall be installed in accordance with 40 CFR Part 60, Appendix A. Once during the

evening and once during the day New Ventures shall measure the pressure drop across the treatment vessels.

g. Record all data, observations, and repairs on the *Collection System Monitoring Form* as prepared by the Engineer and approved by MassDEP.

3. Modifications

a. Upon installation and operation of the enclosed flare and the final pre-treatment system for a period of thirty (30) days in compliance with this protocol and the Preliminary Injunction New Ventures may reduce the frequency of the sampling and inspection provisions of 2.f. above to four (4) times per day (twice per shift) and after operation of the enclosed flare and the final pre-treatment system for a period of forty-five (45) days in compliance with this protocol and the Preliminary Injunction New Ventures may reduce the frequency of the sampling and inspection provisions of 2.f. above to twice per day (once per shift).

b. After initiating reduced sampling pursuant to the provisions of Section F.3. if any hourly sample exceeds the performance criteria of Sections D.1c. and d. above, New Ventures shall resume the sampling frequency required by Section F.2.f. Upon operation of the enclosed flare and the final pre-treatment system thereafter for a period of five (5) days in compliance with this Appendix and the Preliminary Injunction New Ventures may resume the reduced twice per day (once per shift) sampling in accordance with Section F.3.

G. WELLHEAD TUNING GUIDELINES

The Engineer shall upon the installation of the pre-treatment system initially balance the entire gas collection system. Ongoing adjustments of the LFG System shall be performed as needed to maximize the collection system's effectiveness, including adjustments of the control valves at the wellhead collection points.

Each valve of the LFG collection system shall be adjusted to the vacuum and flow rate necessary to ensure the optimum control of landfill gas emissions from the site and to maintain the gas quality, temperature, and static pressure within the specified target ranges listed in Table 1. The LFG System shall be adjusted and other measures implemented as necessary to control and mitigate the release of landfill gas from the site and optimize the operation of the LFG System. Wells with parameters that cannot be maintained within the acceptable ranges listed in Table 1 below, despite repeated adjustment, shall be further analyzed for possible operation outside of the ranges listed.

TABLE 1
ADJUSTMENT PARAMETERS FOR COLLECTION POINTS

Parameter	Acceptable Range	Target Range
Temperature	$< 130^{o}F$	$\leq 130^{o}F$
Oxygen	< 10% vol.	< 5% vol.

The landfill gas collection system shall be operated at a vacuum sufficient to control the surface emissions of H_2S from the landfill. The factors the Engineer must consider in adjusting the vacuum of any component of the landfill gas extraction system include without limitation, the oxygen concentrations, temperature, the associated risk for a landfill fire, and the effectiveness of the temporary and final landfill

cap. In the event that the Engineer elects to reduce the vacuum at certain locations based on these factors, the Engineer shall record such changes in his weekly report. If the Engineer elects, based on the effectiveness of the temporary or final cap or landfill gas extraction system, to reduce the vacuum at locations within the landfill gas extraction system the Engineer shall include such changes in his weekly status report and document through monitoring of the landfill surface for H_2S that the landfill gas extraction system is effectively containing the landfill gas in those areas. In the event the emission of landfill gas is not being contained sufficiently to meet the General Performance Standards identified above then New Ventures shall implement such measures as necessary to achieve the General Performance Standard including without limitation: increasing the vacuum on the landfill gas extraction system, placing additional cover, and expanding the landfill extraction system.

H. LANDFILL GAS AND AMBIENT AIR MONITORING PROTOCOL

1. Background

The landfill gas-monitoring plan, which follows, supersedes the Landfill Gas Monitoring Plan included as Exhibit 4 to the Administrative Consent Order with Penalty that New Ventures entered into with MassDEP on April 13, 2005, File No. ACOP-05-4004, (the "2005 ACOP"). This landfill gas-monitoring plan is designed to provide a real time response to odor complaints from the neighborhoods in the area of the Landfill and to provide for the systematic collection and recording of data regarding landfill gas occurrences at the Landfill and within the abutting neighborhoods for the following purposes.

- Determine whether New Ventures is meeting the General Performances Standards.
- Establish the location and timing of emissions from the landfill.
- Measure the ambient air quality at the landfill and abutting areas.
- Determine whether health or nuisance conditions are occurring.

Because H_2S is the dominant sulfide compound present in the raw landfill gas at the Landfill and the principle source of the nuisance odors, the ambient air-monitoring program is designed around H_2S. The effectiveness of the landfill gas system in controlling the emission of Sulfur Dioxide (SO_2) from the Landfill will be monitored by the collection of landfill gas samples from the LFG System in accordance with the procedures described in Section F above. New Ventures shall comply with the following procedures.

2. Staffing

New Ventures shall maintain staff at the Landfill 24 hours per day 7 days per week who are trained and certified by the Engineer as qualified in the operation of the LFG System including, without limitation the pre-treatment system and flare, and to conduct the monitoring described in this Section and Section F above. New Ventures shall maintain a record of the training of the designated employees at the Facility including a certification by the Engineer that the designated employees have successfully completed the training.

3. Routine Perimeter Monitoring

a. A qualified individual (as described above) shall respond to odor complaints as described below and shall conduct monitoring of the landfill's perimeter for H_2S (with a Jerome Meter) at the perimeter monitoring stations shown on the attached Figure 1 – "Perimeter Monitoring Stations" at 7 AM, 7 PM, and Midnight each day. In the event that multiple complaints are

received and the off-site presence of H_2S is confirmed then the perimeter monitoring for H_2S shall be conducted at least every four (4) for the remainder of the shift unless responses to complaints does not allow sufficient time.

b. When conducting monitoring along the berm or on the landfill surface the Jerome Meter shall be held a distance of approximately 5 feet from the surface of the landfill.
c. When conducting monitoring at stations located on Crow Lane the Jerome Meter shall be held a distance of approximately 5 feet above Crow Lane.
d. A minimum of two (2) samples shall be measured at each monitoring location. The individual readings shall be recorded in the data sheets.

4. Surface Monitoring

New Ventures shall, as part of the daily inspection required by Section F above, survey the landfill surface for H_2S using a Jerome Meter or equivalent.

a. The surface measurements shall be collected over the landfill surface as follows:
    i. in areas that are covered by FML, tarps, or poly the surface monitoring shall be performed along the edges and seams of the FML, tarps, and poly and other locations where visual or olfactoral observations indicate the potential release of landfill gas, such as cracks, tears, punctures or discoloration of the material or by the presence of odors; and
    ii. in uncovered areas where C&D Fines and Residuals have been placed using a 100 foot grid spacing,
b. The surface monitoring shall be done in accordance with Section 4.3.1 of Method 21 in Appendix A of 40 CFR 60, except that the instrument inlet shall be placed 2 to 4 inches off the ground. The probe shall be moved over the landfill surface at a pace slow enough to identify hydrogen sulfide concentrations.
c. Wherever a local peak is identified, the pace shall be reduced and the area searched for the highest concentration. The instrument inlet will be left at the location of the maximum reading for approximately two times the instrument's response time.

5. Off-site Ambient Air Monitoring Station

New Ventures shall continue to maintain and operate 24 hours/day, 7 days/week a fixed ambient air monitoring station at a location approved by the MassDEP in the neighborhood to the south/southeast of the landfill. The instrument is currently located with MassDEP's approval in a permanent structure at 3 Charmanski Drive. The air monitoring stations shall be equipped with a Jerome Meter or equivalent instrument with a continuous data logger that takes and records a reading not less than every 5 minutes, with the following exception:

a. The meter is removed temporarily to monitor selected operations at the landfill or take readings at other offsite locations.
b. If off-site repair of the meter is required such as a malfunction or damage to the meter a replacement meter will be installed within forty-eight (48) hours of the malfunction. In the case of scheduled routine maintenance (such as, yearly factory calibration) a replacement meter will be installed prior to removal of the meter.

6. Response to odor complaints

New Ventures shall implement the following procedures for purposes of receiving and responding to complaints.

a. New Ventures shall maintain a telephone line (the "Complaint Line") for the purpose of receiving complaints regarding the operations at the landfill and releases of landfill gas to off-site areas. The telephone number of the Complaint Line shall be prominently displayed on a sign at the entrance to the landfill. The current telephone number for the complaint line is (978) 462-5240.
b. The following information shall be requested from the complainant and recorded on a Complaint Phone Log an example logs are included in Addendum 1:
    i. Name,
    ii. Address,
    iii. Time,
    iv. Telephone Number, and
    v. Nature of Complaint (if an odor complaint this should include the nature, type and duration of the odor).
c. For complaints registered after landfill operation hours, an answering service shall receive the message at the same phone number and record the information required above. The answering service shall immediately forward the complaint to New Ventures staff at the landfill and to a number identified by MassDEP.
d. New Ventures shall contact DEP and the City of Newburyport by telephone or email or FAX no later than noon of the next business day and report the complaint, the results of NV's investigation (including the monitoring data), any response actions undertaken by New Ventures and any other pertinent information.
e. New Ventures landfill personnel shall within twenty (20) minutes of receiving notice of an odor complaint, but in no case no later than within 1 hour of receipt of the odor complaint by New Ventures, respond to the address of the complainant, and shall take and record readings with the Jerome Meter in accordance with the attached complaint response protocol (Addendum 2). After which, New Ventures shall take and record H_2S readings with the Jerome Meter at the landfill perimeter monitoring stations facing the location of the complaint.

7. Other monitoring

New Ventures shall also conduct monitoring for purposes of worker health and safety in accordance with all applicable state, federal, and local statutes and regulations. In addition, New Ventures shall conduct monitoring of leachate seeps, leachate collection tanks and in response to the occurrence of odors occurs during the course of daily operations, such as material placement or relocation or the construction of the landfill gas system or cap. The results of other monitoring shall be included in the daily log and the Engineer's Weekly Status Reports.

I. RECORD KEEPING AND DATA REPORTING

1. General Requirements

a. New Ventures shall maintain a logbook. All monitoring data shall be inserted into the logbook on an on-going basis including the daily Collection System Monitoring Forms and the Engineer's Weekly Status Report. New Ventures shall also maintain a computerized database of certain monitoring records. The database shall facilitate record keeping and tracking of long-term trends in performance.

b. Records shall be maintained on-site of the volume of LFG (in standard cubic feet (scf)) and propane (scf) burned in the flare, for each month and for each consecutive twelve-month period.
c. New Ventures shall during the operation of the LFG System transmit each daily Collection System Monitoring Form electronically to MassDEP and the Engineer either by facsimile or email by 10 AM of the day following the inspection. Alternatively, New Ventures may download the data to a web-based system accessible to MassDEP and the Engineer. This information will consist of the data obtained from the monitoring requirements of Sections F 2. and H 3 through 6 above and the data on the concentration of methane into the flare, the flare temperature, and the propane usage by the flare.
d. Fill in all of the appropriate "blanks" on the data form being utilized. Omitting information could affect analysis of the data, should troubleshooting be required.
e. Record on the data forms general observations and/or significant occurrences that could affect system operation. Such observations include work on the LFG system, power outages, malfunctions, modifications or repairs to the system, heavy precipitation, or anything else that could cause changes in the system operation.
f. Record and include with the data monitoring sheets any calibration checks and zero and span adjustments conducted on monitoring equipment.
g. Immediately report conditions that require attention (such as significant changes in the gas composition, system damage, etc.) to the Landfill Manager and the Engineer.
h. New Ventures in accordance with 310 CMR 19.011 shall certify all information and reports submitted to MassDEP. The Engineer pursuant to 310 CMR 19.011 shall certify all status reports and documents submitted to MassDEP by the Engineer.

ADDENDUM 1

EXAMPLE FORMS

Odor Survey Form
Crow Lane Landfill

Date _____
Weather_____
Reason for Survey _____

Location	Time	Odor Intensity/Instrument Readings	Odor Type	Comments

Location	Time	Odor Intensity/Instrument Reading	Odor Type	Comments

Comments: 1) _____

_____

2) _____

_____

3) _____

Complaint Phone Log
Crow Lane Landfill

Date	Name	Address	Time	Phone	Comments

PUBLIC ODOR LOG FORM FOR LANDFILL ODORS

Today's Date:_____

Name of Observer: _____
Address: _____
_____

Landfill(s) in Proximity to Odor Observation _____

DESCRIPTION OF THE ODOR

1. what date was odor detected: _____
2. what time was odor first detected: _____
3. what time was odor last detected: _____
4. comments: _____
_____

5. Where were you when you first smelled the odor?

Indoors at home? _____
Were Windows Open? _____ Closed? _____

Outdoors at home? _____

Other location (please specify) _____

6. Strength of Odor: Intensity based on a scale of 1-5 _____
(see attached odor intensity scale)

7. Odor Character (type): _____
(rotten eggs, smoke, garbage, couldn't distinguish, etc)

8. Duration of Odor _____ Minutes Hours

METEOROLOGICAL CONDITIONS AT TIME OF ODOR OBSERVATION

1. Estimated Wind Speed _____ MPH

2. Wind direction (FROM which wind is blowing)

_____ North _____Northeast ____ East _____ Southeast
_____ South _____Southwest ____ West _____ Northwest

3. Sky Conditions: % Cloud Cover _____
____ Rain ____ Overcast _____ Snow

Form Completed By: _____ Date: _____

Form Received By: _____

ADDENDUM 2

Protocol for the Assessment of Landfill Odors

Protocols for the Assessment
Of Off-Site Landfill Odors

New Ventures will use a five (5) point odor intensity field reference scale as noted below:

0	Odor not detectable.
1 - Very Light	Odorant present in the air which activates the sense of smell, but the characteristics may not be distinguishable.
2 - Light	Odorant present in the air, which activates the sense of smell and is distinguishable and definite but not necessarily objectionable in short durations but may be objectionable in longer durations.
3. - Moderate	Odorant present in the air which easily activates the sense of smell, is very distinct and clearly distinguishable and may tend to be objectionable and/or irritating.
4 - Strong	Odorant present in the air, which would be objectionable and cause a person to attempt to avoid it completely.
5 - Very Strong	Odorant present which is so strong it is overpowering and intolerable for any length of time.

ADDENDUM 3

PROPOSED ENCLOSED FLARE SPECIFICATIONS AND OPERATIONS

PROPOSED ENCLOSED FLARE SPECIFICATIONS AND OPERATIONS

This section provides the proposed design and operational specifications for the final enclosed flare at the landfill.

- The enclosed flare design and construction shall, at a minimum, be as follows:

Manufacturer	Highland Power or equivalent
Primary Fuel	LFG
Stack Height (ft) above ground	30
Stack Exit inside diameter (in.)	24
Minimum Residence Time	1 second at 1,600 ^{o} F
Supplemental Fuel	Propane (intermittent as needed)
Maximum LFG Handling Capacity	300 scfm

- The enclosed flare design shall comply with the design requirements contained in 40 CFR 60.18.
- The enclosed flare shall be operated at all times, with the exception of system outages due to equipment failure.
- The enclosed flare shall reduce NMOC emissions by 98 percent by weight, or shall reduce NMOC concentration to 20 ppm_v as hexane at 3% oxygen.
- The enclosed flare shall operate at a set point temperature of 1,600 ^{o}F with a minimum temperature shutoff of 1,400 ^{o}F.
- The enclosed flare shall be equipped with a flame out detection system that will shut down the LFG flare valve and the supplemental fuel valve to minimize LFG emissions if unable to maintain 1,400 ^{o}F and then initiate a re-start. Upon three re-start attempts, the system shall lockout and initiate telephone dial out; the telephone dial out system shall be equipped with a battery backup to operate in the event of a power outage.
- The enclosed flare shall be operated with no visible emissions except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours. 40 CFR 60 Appendix A Method 22 shall be used to determine compliance with the visible emission limit.
- A thermocouple located at the effective end of the combustion chamber shall be installed to provide a record on-site that documents the presence of a flame, the operating temperature, and date and clock time.
- The operation of the flare and final pretreatment shall be fully automated including connection to an off-site location manned 24 hours per day 7 days per week that provides notification of malfunctions of the pre-treatment system or flare.